

**Climate Change Data and Detection Program  
Paleoclimatology  
Information Sheet FY 2010**

**Background**

The CCDD paleoclimatology effort is directed at supporting the CCDD goals of producing long time series of key climate variables, analyzing these time series for information on climate variability and trends, and characterizing the natural background state of the climate system for the purposes of detection and attribution. An overarching theme is the synthesis and integration of diverse observations, combined with models and process understanding, to advance climate prediction.

For FY 2010, there will be a continuation of the research program that focuses on high quality reconstructions of the climate history over the Holocene, with an emphasis on the last two millennia, especially the last 1,000 years (i.e., the late Holocene). Proposals are encouraged that address high resolution, multiproxy reconstructions (global and regional) that blend the paleo and instrumental records to achieve the most accurate, multi-variable climate history possible. The opportunity should exist for well-calibrated, well-replicated records. Proxies should have achieved sufficient maturity, or should have demonstrated promise, for climate studies. Also, high quality documentary archives are a potential, under-utilized resource.

Emphasis will be placed on using currently available measurements at resolutions as fine as seasonal, mining the time- and frequency-domain (including the low-frequency variability) information in multiple, well-calibrated proxies, and producing spatially complete data sets (i.e., filling in Northern Hemisphere data and supplementing these data with equatorial and Southern Hemisphere data sources, as they become available). Proposals that involve a substantial field campaign(s) to collect data should be directed to programs other than CCDD.

**FY 2010 Priorities**

In FY 2010, proposals will be viewed most favorably if they include one or more of the following foci: (1) identifying and characterizing historical extreme events that have severely stressed human or natural systems (e.g., the onset, duration, frequency, intensity, and decline of droughts or megadroughts) and the variability of these extremes, identifying the space and time scales of extreme events that can be resolved in the paleo record, and establishing a common framework for a comparison of paleo and modern estimates of extremes; individual climate events or relatively rapid shifts to new climatic conditions, which would challenge the capability of a society (with built and natural components) to adapt, are candidates for consideration (2) resolution of outstanding calibration and dating issues; distinguishing climatic and non-climatic influences; clarifying seasonality effects in proxy records (3) rigorous computation of sources of uncertainty and uncertainty estimates in reconstructions (4) more accurate estimates of climate forcings (5) the use of paleoclimate data to constrain model simulations and validate the ability of models to simulate forced and unforced change; the use of models to evaluate paleoclimate reconstructions/techniques and (6) narrowing the range of

climate sensitivity estimates.

The emphasis on historical extremes includes the large-scale natural modes of variability (e.g., ENSO, PDO, NAO, etc.), as well as the extreme events experienced at smaller space and time scales that may be connected to these modes. This focus will require the acquisition or production of high-resolution data sets. Also, the identification of precursor conditions for extreme events is desirable and may be a key element of any early warning system.

Modeling studies are encouraged to use model output from other investigations or to demonstrate that proposed model runs will receive substantial support from other sources. Investigators are encouraged to utilize results from Phase 5 of the Coupled Model Intercomparison Project (CMIP5), when available and applicable.

Proposed studies should produce data sets that are ready for climatic interpretation and include, to the extent feasible, this type of interpretation in the proposed study.

### **Additional Information**

Proposals will be considered for up to three years in duration, but one and two-year proposals are encouraged. Funds for each subsequent year of multi-year proposals will be subject to a review of annual progress reports.

Proposals should indicate how data sets will be archived and made available upon project completion. Principal Investigators should contact the Paleoclimatology Branch of the National Climatic Data Center (NCDC) during proposal preparation to discuss the characteristics of data sets that will be produced and the appropriateness of these data for archiving at NCDC. If the data will be accepted at NCDC, the proposal budget should include funding, if needed, for archive steps. Contact information is:

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